

Fatigue and Efficiency in the Iron and Steel Industry.

IN Report No. 5 of the Industrial Fatigue Research Board Dr. H. M. Vernon describes the results of a series of investigations carried out at most of the chief iron and steel centres in the United Kingdom. He points out that there are tremendous variations in the mechanical efficiency of the plant employed in various works and in the efficiency with which human labour is utilised. In most districts the blast furnaces are charged by hand, though four to eight times more men are required than for mechanical charging, and the work is of a much heavier character. In the most efficiently run open-hearth steel furnaces two to three times more charges of steel are worked per week than in the least efficient, whilst the efficiency of rolling mills varies in similar proportion.

The steel-melters, when engaged in mending their furnaces, which they usually do immediately after the molten steel has been drawn off and whilst they are still white-hot, have to undertake one of the most arduous forms of labour known in any industry. Much might be done to lighten this labour, for at some works the average time required for mending is seven times longer than at others; also, owing to the fact that all the furnaces are started at about the same time, they tend to require mending at the same time, so the men frequently cannot relieve one another. This could be remedied by arranging that mending was more evenly spread over the week. Many of the steel furnaces are still charged by hand, in spite of the tremendous labour and delay involved.

The effect of fatigue on health and longevity was studied by Dr. Vernon (in conjunction with Mr. E. A. Rusher) by tabulating the sickness and mortality data of 24,000 iron and steel workers for a six-year period. These data, which had accrued under the National Health Insurance Act, showed that there is a definite relationship between the amount of sickness experienced by the workers and the nature of their occupation. Steel-melters headed the list, and showed 23 per cent. more sickness than the average and 26 per cent. greater mortality. The puddlers of wrought-iron showed a 20 per cent. excess of sickness, the whole of this excess being due to respiratory diseases and rheumatism. Presumably this was because the puddlers usually work alternate 20-minute periods of very hot and heavy work followed by light work or complete rest, during which they tend to catch chills. Other workers at hot and heavy work likewise showed an excess of sickness, whilst workers at ordinary temperatures, such as cranemen and general labourers, showed 9 per cent. less sickness than the average.

University and Educational Intelligence.

MR. JAMES W. LOW, assistant in the natural history department of University College, Dundee, has been appointed lecturer in zoology at Birkbeck College, London.

THE Manchester Education Committee has appointed Prof. B. M. Jones to be principal of the Manchester College of Technology in succession to Principal Garnett. Prof. Jones, who was educated at Oxford, was for some time professor of chemistry at the Government College, Lahore, and more recently professor of chemistry at, and director of, the Edward Davies Chemical Laboratories, Aberystwyth.

Science for February 25 announces that Prof. J. R. Angell was elected president of Yale University at a meeting of the University Corporation on February 20; the new president will take up his duties at the close of the university year. Prof. Angell is a graduate of the University of Michigan, and has been professor of

psychology, dean, and acting president of Chicago University. He has also shown ability as an administrator and a leader of education while acting as chairman of the National Research Council and as president of the Carnegie Corporation.

A LIST of the students and teachers from the Dominions overseas and from foreign countries at present in our universities, which supplements that issued in December last and referred to in *NATURE* of December 30, p. 585, has been issued by the Universities Bureau of the British Empire. Although the information is not yet quite complete, an interesting summary has been compiled showing the numbers which are contributed by each of the continents. Africa sends 1046; America and the West Indies, 676; Asia, 1228, of whom 974 are from India, Burma, and Ceylon; Europe, 703; and Australasia, 282. The grand total to date is thus 3935, of whom about two-thirds are from our overseas Dominions.

THE Carnegie Corporation of New York has entered into an agreement with the Leland Stanford University of California by which it will give large financial support to a research institute which the University is about to establish for the intensive study of the problems of the production, distribution, and consumption of food. The need for such research was first brought to the attention of the Corporation by Mr. Herbert C. Hoover, and it is proposed that the institute shall bear his name. The selection of the University as its home is partly due to the fact that Mr. Hoover has deposited there the documentary material he has collected relative to the economic side of the war. The work of research, for which the laboratories of the University will be made available, is to begin on July 1.

THE *Pioneer Mail* for February 18 publishes extracts from the presidential address delivered by Lt.-Col. J. W. D. Megaw to the Medical Research Section of the Indian Science Congress. Col. Megaw states that of late persistent rumours have been circulated that the Government of India is not prepared to undertake the full responsibility for the School of Tropical Medicine and Hygiene of Calcutta and Bombay because all its funds are wanted for the establishment of a new Imperial Institute of Medical Research in Delhi. The school was established largely through the initiative of Sir Leonard Rogers with funds subscribed by the public and grants from the Government. Col. Megaw alludes to the valuable work done by the school, and pleads earnestly for its proper support, suggesting that the programmes of medical research in India should be considered by an authoritative committee of experts.

La Nature for March 19 gives some extracts from the statistics of attendance at the University of Paris which have been published in *L'Université de Paris*. Before the outbreak of war the total number of students in the University was 17,308; in the succeeding four years there was naturally a big drop, while in 1918 the numbers had risen again to 11,026, a figure only about a thousand short of the 1910 total. In 1919 there was a big influx of students, much as our own universities experienced, and the total rose to 17,761; but surprising figures are given for 1920, from which it appears that only 11,214 students were in attendance. The distribution of the totals among Frenchmen and others and among men and women also reveal some strange facts. The figures for the men classed as "étrangers" for 1920 show a decrease of about one-fifth of the 1913 total, while for women the decrease for the same period is fully two-thirds. The numbers of Frenchmen attending the University have decreased almost by one-half, while the numbers